

CLAIMS: *Please amend the claims according to the status designations in the following list, which contains all claims that were ever in the application, with the text of all active claims.*

1. – 16. (CANCELED)

17. (CURRENTLY AMENDED) A method for visually tracking a target object in three dimensions, comprising steps of:

- a) capturing the target object with two or more imaging sensors,
- b) maintaining a large number of 3D target location hypotheses,
- c) initially distributing the 3D target location hypotheses randomly in spaces viewed by said imaging sensors,
- d) calculating locations of new hypotheses by adding offsets to locations of old hypotheses, wherein the offsets are randomly drawn between two numbers,
- e) projecting each of the 3D target location hypotheses ~~each target location hypothesis~~ from 3D space to 2D image spaces of said imaging sensors,
- f) measuring confidences about the presence of the target object based on a combination of color and motion cues in each of the images captured by said imaging sensors, and
- ~~d) measuring confidences about the presence of the target object in images captured by said imaging sensors, and~~
- g) ~~e)~~ combining the measured confidences of the 3D target location hypotheses ~~hypotheses~~ to obtain 3D location of the target object,
- wherein the color and motion cues are spatially spread out using averaging before they are combined, and

wherein the 3D location of the target object ~~final target object location~~ is given by a ~~the~~ weighted mean of all ~~location hypotheses of said 3D target location~~ hypotheses, ~~hypotheses for combining the measurements, and~~

~~whereby examples of said target object can comprise human appendage, human hand, and human head.~~

18. (CURRENTLY AMENDED) The method according to claim 17, wherein the step of e) projecting each of the 3D target location hypotheses ~~method~~ further comprises a step of utilizing ~~projecting target locations with~~ projections that are obtained by calibrating said imaging sensors with respect to a reference coordinate system.

19. (CANCELED)

20. (CANCELED)

21. (CURRENTLY AMENDED) The method according to claim 17 ~~20~~, wherein the method further comprises a step of calculating the color cues using a color model of the target object, wherein the color model of the target object is represented by a histogram that is estimated by collecting color samples of the target object.

22. (CURRENTLY AMENDED) The method according to claim 17 ~~20~~, wherein the method further comprises a step of calculating motion cues by measuring differences between images captured sequentially by said imaging sensors.

23. (CURRENTLY AMENDED) The method according to claim 17, wherein the step of b) maintaining a large number of 3D target location hypotheses ~~method~~ further comprises a step of ~~maintaining 3D target location hypothesis~~ by creating a set of 3D target location hypotheses at each time step,
wherein ~~the~~ weights in the weighted mean of all 3D target location hypotheses ~~of the new hypotheses~~ are given by said confidences.

24. (CANCELED)

25. (CANCELED)

26. (CANCELED)

27. (CURRENTLY AMENDED) An apparatus for visually tracking a target object in three dimensions, comprising:

- a) means for capturing the target object with two or more imaging sensors,
- b) means for maintaining a large number of 3D target location hypotheses,

c) means for initially distributing the 3D target location hypotheses randomly in spaces viewed by said imaging sensors,

d) means for calculating locations of new hypotheses by adding offsets to locations of old hypotheses,

wherein the offsets are randomly drawn between two numbers,

e) e) means for projecting each of the 3D target location hypotheses ~~each target location hypothesis~~ from 3D space to 2D image spaces of said imaging sensors,

f) means for measuring confidences about the presence of the target object based on a combination of color and motion cues in each of the images captured by said imaging sensors, and

~~d) means for measuring confidences about the presence of the target object in images captured by said imaging sensors, and~~

g) e) means for combining the measured confidences of the 3D target location hypotheses hypotheses to obtain 3D location of the target object,

wherein the color and motion cues are spatially spread out using averaging before they are combined, and

wherein the 3D location of the target object ~~final target object location~~ is given by a the weighted mean of all location hypotheses of said 3D target location hypotheses. hypotheses for combining the measurements,

~~whereby examples of said target object can comprise human appendage, human hand, and human head, and~~

~~whereby examples of the imaging sensors can comprise color cameras and IEEE 1394 cameras.~~

28. (CURRENTLY AMENDED) The apparatus according to claim 27, wherein the e) means for projecting each of the 3D target location hypotheses ~~apparatus~~ further comprises means for utilizing projecting target locations with projections that are obtained by calibrating said imaging sensors with respect to a reference coordinate system.

29. (CANCELED)

30. (CANCELED)

31. (CURRENTLY AMENDED) The apparatus according to claim 27 ~~30~~, wherein the apparatus further comprises means for calculating the color cues using a color model of the target object, wherein the color model of the target object is represented by a histogram that is estimated by collecting color samples of the target object.

32. (CURRENTLY AMENDED) The apparatus according to claim 27 ~~30~~, wherein the apparatus further comprises means for calculating motion cues by measuring differences between images captured sequentially by said imaging sensors.

33. (CURRENTLY AMENDED) The apparatus according to claim 27, wherein the b) means for maintaining a large number of 3D target location hypotheses ~~apparatus~~ further comprises means